THE INTERNATIONAL ZOOLOGICAL CONGRESS AT MOSCOW.

THE International Zoological Congress held its second session in Moscow during the month of August last, and with most commendable zeal the committee, to whose care the editing and publishing of the memoirs read were committed, now publish the first part of the volume of its Proceedings. This part is printed in royal octavo size, and contains 350 pages, with several illustrations. All the memoirs are in French, thirteen out of the total thirty having been translated from, it is presumed, Russian. In the first section—that of questions concerning biology and systematic and faunistic zoology from a general standpoint—there are three papers. J. de Kennel replies to the queries of Prof. L. Cosmovici: (1) On a definite arrangement of the animal kingdom in "Phyla"; (2) is there a type "Vermes"? (3) on a uniform terminology of the secretory organs of worms. Ch. Girard on some points of nomenclature. J. de Bédriaga on introduced species, and on hybrids, reptilian and amphibian. In Section II.—the same subjects from a special standpoint—there are twelve papers:—P. N. Boutchinsky, on the Black Sea fauna; refers to a report on invertebrates of the Bay of Sebastopol by Péréïaslavtzeva, who records 639 forms found. He describes three zones: (1) from the surface to a depth of 175 feet; (2) from 175 to 280 feet in depth, with a minimum temperature of 6–7° C.; and (3) from 280 to 700 feet, with a slightly higher temperature than in the previous zone, 8–9° C. From a depth of 700 feet the water contains a quantity, more or less large, of sulphureted hydrogen, the quantity notably increasing with the depth. T. J. Van-Beneden gives a note on the living and extinct Cetacea of the same sea. Gr. Kojevnikov gives an account of the fauna of the eastern Baltic based on many recent explorations. Dr. J. de Bédriaga treats of European and circum-mediterranean vipers. C. Grévé has a paper on the geographical distribution of the Carnivores, and T. Richard, one on the geographical distribution of the Cladocerous crustacea. H. de Jhéring makes some observations on insects' nests made of clay. Prof. A. Brandt gives a classification of animal variations according to their causation. Prof. A. Milne Edwards and E. L. Bouvier give a most interesting account of the varieties and distribution of *Parapagurus pilosimanus*, S. T. Smith. A table with the comparative measurements of forty-two specimens, is appended. *P. abyssorum* and var. *scaber*, are reduced to the first named species. F. Vejdovsky describes *Thuricola gruberi*, n. sp., and *Monodontophrya longissime*, gen. et sp. nov., the former from a stream near Bodenbach, the latter in the alimentary tract and body cavity of *Rhynchelmis limosella*, Hofm. In a short note Dr. J. de Bédriaga calls attention to some differences between *Chalcides simonyi*, Steind., and *C. viridanus*, which forms Boulenger and Steindacher have proposed to unite, and thinks that *Molge luschani*, Steind., neither belongs to Molge nor to Salamander, but to a European and American genus, not however named by him.

The third section contains eight papers on histology and embryology. N. Kholodovski, contributions to a mesoderm and metamere theory. A. Ptitzine, note on the formation of the germ of the peripheric nervous system. V. Roudnev, note on the development of the cardiac endothelium in Amphibians. Mme. O. Tikhomirova, on the development of *Chrysopa perla*. Fr. Vejdovsky, on the segmentation of the ovum and the formation of the blastoderm in the Pseudoscorpiones, and on a rudimentary organ in the same. N. Koulaguine, contribution towards the history of the parasitic hymenoptera. A. Tikhomirov, value of embryological research for classification. Section IV., physiology:—C. Khvorostansky, on the luminosity of animals from the White Sea.

In Section V., devoted to morphology and comparative anatomy, L. Cosmovici writes as to the purport of the "aquiferous system," "segmentary organs," "excretory organs," and "nephridia." H. de Jhéring, on the presence or absence of an excretory apparatus in the genital organs of the metazoa. P. Mitrophanov, note on the metameric significance of the cranial nerves. N. Nassonov, on the position of the Strepsiptera in the animal system, according to the facts of post-embryonal development and of anatomy. A. O. Kovalevsky, on the excretory organs of the terrestrial Arthropods. N. Zograf, on the origin and parentage of the Arthropods, more especially the tracheal bearing forms.

A BOTANIST'S VACATION IN THE HAWAIIAN ISLANDS.

THE new number of the American *Botanical Gazette* (vol. xvii., No. 12) contains the first part of a paper by Prof. D. H. Campbell, describing his experiences during a vacation spent last summer in the Hawaiian Islands. We reprint the following passage:—

On awakening upon the seventh day out, and looking through the port-hole of my state-room, I saw that we were sailing near land. Rugged barren looking hills were seen; and, going upon deck, I learned that this was Oahu, the island upon which Honolulu is situated. As we skirted the shore at a distance, I soon spied a grove of unmistakable cocoa palms, the first hint of the tropical vegetation to which I was soon to be introduced. Beyond was the bold promontory of Diamond Head, an extinct volcanic crater, forming a great bowl with rugged sides, right at the water's edge. Beyond this, and bounded partly by it, is the bay upon whose shores stands the city. Back of it rose abruptly a chain of mountains, in places about three thousand feet above sea-level, and furrowed by deep valleys, whose walls, as well as the cloud-capped summits of the hills, were covered with the most wonderfully verdant vegetation. Never before had I realized the possibilities of green. Blue greens, yellow greens, gray greens, and positive greens, with all degrees of these and others that are indescribable, combined to form what Whistler would term a symphony in green.

As if to vie with the colours of the mountains, the sea exhibited an equally wonderful variety of tints. Outside the harbour is a coral reef, and within this the water is of the pale green common to shallow ocean water; but outside it deepens very rapidly into the vivid blue of the open ocean. From a distance the line is clearly seen; but, as the observer approaches shore, the water changes from deep blue through every shade of blue and green until the pale green of the water within the harbour is reached.

As we approached land numbers of the queer outrigger canoes of the natives were met, and from the wharf boys jumped into the water and swam about the ship in the hope of persuading some of the passengers to throw over to them coins, which they were very skilful in diving for.

On the way to the hotel a few gardens were passed, and in them everything was strange. By far the most striking thing was the superb *Poinciana regia*. Although I had never seen this before I recognized it in an instant from a description of Charles Kingsley's, read long ago. Surely in the whole vegetable kingdom there is no more splendid plant. A spreading flat-topped tree, perhaps thirty feet high, with feathery green, acacia-like foliage and immense flat clusters of big flaming scarlet flowers that almost completely hide the leaves so that the tree looks like an immense bouquet. They were in their prime about the time of my arrival in Honolulu, and continued to flower more or less for the next six weeks. Pretty much everything in Honolulu, except the cocoanuts and an occasional haw tree (*Paritium tiliaceum*) is planted; but people seem to vie with each other in seeing how many different kinds of plants they can grow, and the result is that the place is like one great botanical garden. To Dr. Hillebrand this is said to be largely due, as he was one of the first to introduce foreign ornamental plants, and his place, which is kept much as it was at the time he left the islands, was a very remarkable collection of useful and ornamental plants from the warm regions of almost the whole globe.

Probably the first thing that strikes the traveller from the cooler regions is the great variety and number of palms. Of these the beautiful royal palm (*Oreodoxa regia*) is easily first. With its smooth columnar trunk, looking as if it had been turned, encircled with regular ring-shaped leaf-scars, and its crown of plumy green leaves, it well deserves its name. Other characteristic palms are various species of betel palms (Areca), wine palm (Caryota), sugar palm (Arenga), and a great variety of fan-palms of different genera. None is more beautiful than a thrifty young cocoa palm, but unfortunately it is very subject in the Hawaiian Islands to the ravages of some insect which eats the leaves and often renders them brown and unsightly. Indeed, it is almost impossible to find a specimen which is not more or less disfigured by this pest. The trunk of the cocoanut tree is usually more or less crooked, and in old specimens much too tall

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for its thickness, so that the old trees look top-heavy. The date palm flourishes in Honolulu, where it is quite dry, but does not do so well in the wetter parts of the islands.

On studying the other trees, one is struck at once by the great preponderance of Leguminosæ, especially Cæsalpineæ and Mimoseæ. All about the town, and growing very rapidly, is the algaroba (*Prosopis juliflora*), a very graceful tree of rapid growth, with fine bipinnate leaves and sweetish yellow pods, which animals are very fond of, and which are used extensively for fodder. Add to this that the tree now forms the principal supply of fuel for Honolulu and we can realize its full value. Other leguminous trees that are planted are the monkey-pod (*Pithecolobium samang*), tamarind, various species of Bauhinia and Cathartocarpus. One species of the latter with great drooping bunches of golden yellow flowers and enormous cylindrical pods three or four feet long, rivals the Poinciana when in full flower.

Mingled with these are a great number of shrubs and trees with showy flowers or leaves, most of them more or less familiar to the stranger, either from pictures or from green-house specimens. Several species of Musa are grown, and when sheltered from the wind are most beautiful; but ordinarily the leaves are torn into rags by the wind. The tall and graceful *M. sapientium* has been largely supplanted by the much less beatiful Chinese banana, *M. Cavendishii*, which is short and stumpy in growth, but enormously prolific. The related traveller's tree (*Ravenala Madagascariensis*), is a common and striking feature of many Hawaiian gardens. Of the many showy flowering shrubs, the beautiful *Hibiscus Rosa-Sinensis* is one of the commonest, and is used extensively for hedges. One of the most striking hedges in the city, however, is the famous one at Puna Hou college, which is 500 feet long and composed of night-blooming cereus. I was not fortunate enough to see this when it was in full flower, but I saw a photograph of it when it was estimated that there were about 8000 flowers at one time.

Of the fruit trees ordinarily grown, the following may be mentioned. The mango is a very handsome tree with dense dark green foliage and masses of yellow and reddish fruit on long hanging stalks. The bread-fruit tree is common, both cultivated and wild, and is a very beautiful tree of moderate size, with leaves looking like immense fig-leaves, and the fruit like a large osage orange. I saw no ripe fruit, and so had not an opportunity of testing its quality. Guavas of different varieties are extremely common, both wild and cultivated, and the various fruits of the whole citrus tribe grow well. The few specimens of temperate fruits were, for the most part, much inferior to those of the United States. Of the fruits that did not strike my fancy, at least at first, was the alligator pear (*Persea gratissima*), a big green or purple pear-shaped fruit with an immense single seed. The pulp is somewhat waxy in consistence and very oily. It is eaten as a salad, and very much relished by the islanders, but the taste is acquired. The curious papaya (*Carica papaya*) is another fruit which did not appeal to my palate. Its big orange fruit, not unlike a melon in appearance when cut open, has a peculiar "squashy" flavour that suggested it having been kept a day too long.

Many showy climbers are planted, some of which, like Stephanotis, Thunbergia and Allamanda are superb; but there is one that is particularly obnoxious in colour, Bougainvillea, whose magenta floral-bracts are an offence to the eye, forming a cataract of raw colour. It looks, as some one observed, as if it had just come from a chemical bath.

As soon as one gets fairly away from the city, it is at once seen that all the luxuriant vegetation is strange. Along the seashore is a plain gradually rising into low hills, both almost destitute of trees, except here and there a few cocoa palms along the shore. Of the strictly littoral plants among the most conspicuous is the curious *Ipomœa pes-capræ*, with deeply two-cleft leaves and purplish pink flowers. In the fertile lowlands near the sea are the principal cane and rice fields, which with taro are the staple crops. The rice is cultivated entirely by Chinese, near Honolulu; but on the sugar plantations the Japanese are largely employed. To see a Chinese laboriously transplanting little handfuls of rice into straight rows, or ploughing in the mud and water with a primitive plough drawn by a queer Chinese buffalo are sights very foreign to an American eye. Sugar cane is eminently productive in the islands, and, hitherto, has proved the main source of revenue; but now the Hawaiians are bewailing the depression caused by the free admission of sugar from other countries into the United States; as, hitherto, their product has enjoyed practically a monopoly of the American market, having been admitted by treaty free of duty.

I made several trips up the valleys back of the city, but owing to the almost constant rain in many of them, these were not always agreeable. However, one is richly repaid by the luxuriance and variety of the vegetation. For a mile or two we pass between grass-covered hills, or hills overgrown in places with the lantana, which, introduced as an ornamental plant, has become a great pest. This plant covers some of the hills with an absolutely impassable thicket, and spreads very rapidly, so that it is a serious problem what is to be done with it. Of the common roadside plants, an orange and yellow milk-weed and the showy white *Argemone Mexicana* were the most conspicuous. As one proceeds farther, where more moisture prevails, the variety becomes larger. Thickets of Canna and a Clerodendron with double rosy-white flowers, are common, and the curious screw-pine (*Pandanus odoratissimus*) is occasionally seen. This latter is a very characteristic plant, but is much more abundant in some of the other islands. In this region some very showy species of Ipomœa are very common, among them the well-known moon-flower, *I. bona-nox.*

With the increase in moisture, as might be expected, the mosses and ferns increase in number and beauty. There are many of them of types quite different from those of the United States. One of the commonest ferns of the lower elevation in *Microlepia tenuifolia*, a very graceful fern with finely divided leaves and terminal sori. Species of Vittaria, with very long undivided leaves, are also common here.

As we ascend one of the commonest ferns is *Sadleria cyatheoides*, a very large fern, often more or less arborescent. Ascending still higher the number and variety of ferns increases rapidly, and many beautiful and interesting ferns and mosses and liverworts become common.

At about one thousand feet elevation we begin to meet with species of Cibotium, to which genus belong the largest of the tree ferns of the islands. Here, also, I met for the first time with the smallest of all the ferns I have ever seen, *Trichomanes pusillum.* This dainty little fern, one of the Hymenophyllaceæ, forms dense mats on rocks and tree-trunks, looking like a delicate moss. The full-grown frond is fan shaped, and, with its stalk, is not more than half an inch high. These tiny leaves, nevertheless, in many cases bore sporangia.

SOCIETIES AND ACADEMIES.

London.

Royal Society, December 8.—"Preliminary Account of the Nephridia and Body Cavity of the Larva of *Palæmonetes varians.*" By Edgar J. Allen, B.Sc., University College, London. Communicated by Prof. W. F. R. Weldon, F.R.S.

The Green Gland, in a larva of *Palæmonetes* which is a few days old, consists of an end-sac, which communicates by means of a U-shaped tube with a very short ureter, opening at the base of the second antenna. At the time of hatching, the gland consists of a solid mass of cells, without a lumen. In later stages the tube of the gland enlarges to form the bladder. The enlarged bladders of the two sides subsequently meet and fuse in the middle dorsal line, forming the nephroperitoneal sac described by Weldon and Marchal.

The Shell Gland is found in late embryos and young larvæ of *Palæmonetes.* It consists of a short renal tube, with a considerable lumen, which communicates internally with an end-sac, and opens externally at the base of the second maxilla.

Sections through the anterior region of the thorax of *Palæmonetes* show that the body cavity may be divided into four regions: a *dorsal sac*, surrounded by a definite epithelium, in which the cephalic aorta lies, but which does not itself contain blood; a *central cavity*, containing liver, intestine, and nerve-cord; two *lateral cavities*, containing the proximal ends of the shell glands; and fourthly, the *cavities of the limbs*, which contain the distal ends of the same organs.

In late embryos of *Palæmonetes* solid masses of cells lie upon either side of the cephalic aorta. The dorsal sac is formed by the hollowing out of these masses of cells. Two lateral cavities are thus formed, which are separated by the aorta. The protoplasm of the cells lining these cavities, which is at first gathered into masses around the nuclei, then spreads out into a thin sheet, drawing away from the lower portion of the aorta, and causing the two lateral cavities to unite ventrally, and so form a single sac.

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